# Chapter 1 —Setting Up the Analysis

## Objectives of the Analysis

This Forest-scale roads analysis will be used to support the analysis for the ***Malheur Land and Resource Management Plan*** (Forest Plan) revision as well as subsequent watershed and project level road analyses. It includes the Ochoco National Forest Lands administered by the Malheur National Forest. It is intended to identify and help prioritize opportunities that address watershed health and road maintenance.

## Analysis Area and Scale

This analysis will**:**

- Be at the forest scale for the Malheur National Forest (approximately 1.46 million acres), and those Ochoco National Forest lands administered by the Malheur (approximately 0.24 million acres) in eastern Oregon, Region 6 of the National Forest System.

- Concentrate on the Forests minimum primary road system. This system includes virtually all of the Forest roads that currently have an Operational Maintenance Level (OML) of 3, 4, or 5, (roads maintained for low clearance vehicles or passenger cars). Other collector roads and selected local roads will also be included in the analysis, regardless of their current OML, if they are determined to have high recreation or resource management values, or both.

- Assess relative watershed and aquatic risk ratings for National Forest lands at the sub-watershed scale {$6^{th}$ level Hydrologic Unit Code (HUC)}. Those ratings will be determined considering all inventoried classified roads.

- Be spatial or Geographic Information System (GIS)-based whenever possible.

- Use existing information and the professional judgment of the Interdisciplinary team members.

## Interdisciplinary Team Members and Participants

The Core Interdisciplinary Team and their specialties:

| | | |
|---|---|---|
| Richard Gritz | Forest Fish Biologist | Supervisor's Office |
| Tom Friedrichsen | Forest Hydrologist | Supervisor's Office |
| Mark Lysne | Geology/Engineer/Writer-Editor | Supervisor's Office |
| Carole Holly | Forest Recreation Planner | Supervisor's Office |

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| Laura Mayer | Assistant Fire Staff | Supervisor's Office |
| John Laliberte | Forest INFRA Manager | Supervisor's Office |

**Extended team members and their specialties:**

| | | |
|---|---|---|
| Marc Strong | GIS Specialist | R6-IRM |
| Wallace Dunaway | Project Engineer | Emigrant District |
| Kim Conlee | Project Engineer | Supervisor's Office |
| Jerry Hensley | Forest Timber Officer | Supervisor's Office |
| Don Hann | Forest Archeologist | Supervisor's Office |
| Richard Larson | Special Uses | Prairie City District |
| James Kelly | Writer-Editor | Blue Mountain District |
| Jennifer Harris | Public Affairs Officer | Supervisor's Office |
| Patti Hammett | Public Affairs | Supervisor's Office |

**Responsible Staff Officers:**

| | | |
|---|---|---|
| Teresa Raaf | Forest Engineering, Lands, & Minerals Staff Officer | Supervisor's Office |
| Bill Supulski | Forest Planning Staff Officer | Supervisor's Office |

## Types of Forest Roads

There are three primary types of Forest Service roads, unclassified roads, temporary roads, and classified roads:

**Unclassified Roads** are roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travel-ways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1).

Very few unclassified roads have been inventoried to date, so an estimate of the actual number of miles is unavailable at this time. The majority of unclassified roads have been created by off-road vehicle traffic, while others include roads that were intended to be temporary roads or other roads intended to be decommissioned, but they were not decommissioned effectively. These roads await management decisions on whether or not to include them as part of the transportation system or to decommission them. The analysis for those decisions will be made at the watershed or project scale.

**Temporary Roads** are roads authorized by contract, permit, lease, other written authorization, or emergency operation, not intended to be part of the forest transportation system and not necessary for long-term resource management (36 CFR 212-1).

Decisions to construct temporary roads are made at the project scale. Temporary roads are intended to be managed by the activities under which they are authorized, and to be decommissioned at the conclusion of the authorized activity.

**Classified Roads** are roads that are wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service (36 CFR 212.1).

## Operational and Objective Maintenance Levels

Classified roads are maintained to varying standards depending on the level of use and management objectives. Roads may currently be maintained at one (operational) level with plans for maintenance at a different (objective) level at some future date. So each classified road is assigned both an operational maintenance level, and an objective maintenance level:

- The **operational maintenance level** (OML) is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns. It defines the intended current planned level to which a road is to be maintained.

- The **objective maintenance level** (ObML) is the maintenance level proposed for future accomplishment, considering expected road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same, higher, or lower than the operational maintenance level.

## Road Management Objectives

Road Management Objectives (RMOs) validate, revise, or establish road management objectives for all classified National Forest System roads. The objectives are determined by Forest Plan direction, project decisions, and the results and findings of roads analyses. Road management objectives establish the design criteria (FSM 7720) and operation and maintenance criteria (FSM 7730.3) for each road. They also establish and document operational and objective maintenance levels for each road. The road management objectives require approval by the Responsible Official (usually the District Ranger) and are included in the Forest Road Atlas (FSM 7711.1).

## Maintenance Levels

Through the RMOs, each road is assigned to one of five different operational (and objective) maintenance levels. The operational level determines what type and frequency of maintenance work is planned to maintain the road to the desired standard and preserve

the investments in the road. These maintenance levels are defined in ***Forest Service Handbook (FSH) 7709.58 – Transportation System Maintenance Handbook*** as follows:

- **Level 1:** Assigned to intermittent service roads during the time they are closed to motorized traffic. The closure period must exceed one year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

- **Level 2:** Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles.

- **Level 3:** Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles.

- **Level 4:** Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles at certain times.

- **Level 5:** Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is "encourage."

Guidelines for maintenance of road drainage is the same for all OML levels, but other work including surface maintenance and replacement, shoulder maintenance, roadside brushing, hazard tree removal, sign placement and maintenance, and others, can vary

depending on the OML of the road. Whether the planned maintenance occurs on schedule or is deferred to a later time often depends on the availability of funding.

Less than 13 percent (1219 miles) of the roads administered by the Malheur are currently OML 3, 4, or 5. These are the roads currently managed and maintained for low-clearance or passenger car use. These roads typically receive the highest levels of traffic and are the most costly to maintain to standard. OML 3, 4, and 5 roads fall under the Highway Safety Act of 1966. The Highway safety Act (HSA) requires each Federal Agency to implement the HSA program standards to the extent that they are relevant to the activities of the agency. The objective of the act is to reduce the number and severity of accidents, and to reduce the potential for accidents on public roads under jurisdiction of Federal Agencies.

The remaining 8,451 miles of inventoried NFS roads are either restricted to motor vehicle traffic use (OML 1) or managed only for high-clearance vehicles such as pickup trucks and four-wheel drive vehicles (OML 2). These roads are primarily single-purpose, low volume roads, and normally single-lane roads with turnouts. The majority of these roads have running surfaces composed of "native materials" or whatever local road cuts produced, which are highly variable and related to the local soils and geology. A significant number of these roads have surfaces that have been improved with imported rock or aggregate materials.

Table 1 displays the current number of classified road miles by OML and ObML. By far the most significant difference between current OML and ObML is the number of miles of OML 2 roads that have ObML of 1. This means that if decisions were made to change all current OML 2 roads to their ObML, the Forest would need to close 4152 miles of road that is currently open. If this were to occur it would clearly result in significant changes in terms of road related resource impacts, road maintenance costs, and reductions in motorized vehicle access.

On the other hand the table also indicates a number of OML 3-5 roads that would change to either higher or lower maintenance levels if the ObMLs were implemented. Even though the number of road miles in these categories is relatively small, they could produce significant changes in road maintenance costs, because those costs are much higher for OML 3-5 roads.

Table 1 – Current Operational and Objective Maintenance Levels for classified roads.

| OPERATIONAL Maintenance Level | OBJECTIVE Maintenance Level | ROAD MILES (APPROX.) |
|---|---|---|
| 1 | 1 | **2616** |
| 1 | 2 | **23** |
| 2 | 1 | **4152** |
| 2 | 2 | **1635** |
| 2 | 3 | **25** |
| 3 | 2 | **14** |
| 3 | 3 | **850** |
| 3 | 4 | **19** |
| 4 | 3 | **31** |
| 4 | 4 | **286** |
| 5 | 5 | **19** |
| | | **9670 (total miles)** |

## Design of the Forest Scale Analysis

This analysis considered only classified roads. The initial direction to the team was to focus on roads that currently had the highest operational maintenance levels, including all OML 3, 4 and 5 roads. The focus on OML 3-5 roads is also what was shared with the public at the meetings held in John Day and Burns on September 21, 2002. After detailed review of maps that displayed roads currently identified in INFRA as OML 3-5, it became apparent to the team that this group of roads has evolved over time without a consistent process. There were noticeable differences between former Malheur Ranger District boundaries (Bear Valley, Burns, Long Creek, and Prairie City), and even more significant differences between the Malheur and Ochoco lands that are now administered by the Malheur. In some areas, many or virtually all of the collector roads that had historically been OML 3 had been changed to OML 2 in recent years. If the analysis proceeded as initially directed, many roads would have been analyzed in some areas, and very few roads in other areas.

Consequently, the team proposed a larger group of roads for the analysis. The team proposed selecting and analyzing a group of roads that represent the "potential minimum primary road system", which is defined as:

> ***Forest arterial, collector, and local roads that, for the foreseeable future, will need to remain open and maintained to an Operational Maintenance Level of 2 or higher, to provide for public and or administrative access***.

The Forest Supervisor agreed with the teams' proposal. Using this definition, the team developed a map and list of specific roads that would be analyzed in detail with this Forest-scale analysis.

## Determining Which Roads Comprise the Potential Minimum Primary Road System

The process used to determine which roads would be included and analyzed was an integrated approach that considered issues, data, and existing information. First, the team took a broad scale look at all of the existing classified roads, which included about 9670 miles of roads (INFRA 12/03).

### Determining Resource and Recreation Values

The initial task was to determine which of the classified roads have relatively high resource values, recreation values, or both. All of the roads that were included in the potential minimum primary road system determined by this analysis were determined to have high overall values. Considerations used in this step included evaluating which roads provide:

- Main access routes for management activities
- Major tie-through roads that connect to other Forest roads, County roads or adjacent Forests
- Access to lookouts, administrative sites, and trailheads
- Access to private lands and urban interface areas (fire suppression)
- Access to electronics sites
- Access to areas with high recreation values
- Other high value access, as determined by the team during the process.

The group of roads that was selected using this evaluation process included all of the Forest arterial and collector roads, as well as a significant number of relatively high use local roads. Many of the local roads that were selected and included are the same "encourage use" OML 2 roads that are currently displayed on Forest Recreation maps and listed in INFRA as major local roads. A number of other local roads were added based on knowledge of team members or District personnel who were asked to assist in the effort, or based on comments from internal reviews.

The results of this effort were used to produce a map and a selected group of Forest roads that were determined to have high resource or recreation values, or both. This group of roads includes approximately 2128 road miles, and comprises the recommended

minimum primary road system for Forest Lands administered by the Malheur National Forest. It addition to all of the Forest roads that are currently OML 3-5 (approximately 1219 miles), approximately 909 miles of other roads were determined to be part of the minimum primary road system.

This part of the analysis also included evaluating which of these roads had the greatest need to be maintained for passenger car or low clearance vehicle use (OML 3, 4, or 5), and which roads could meet most management objectives and resource needs if they were maintained to OML 2 (open for public and administrative access, but not maintained for low clearance vehicles). The roads determined to have the greatest need for OML 3, 4, or 5 were typically either arterial roads or other roads that provide access to major recreation sites.

It is important to note that this Forest-scale roads analysis analyzed about 22 percent of the total road system. The remaining 78% of system roads and any unclassified roads will be analyzed during sub-Forest scale assessments (at the watershed or project level). The outcomes from those analyses should include recommendations of whether those roads are still needed for access and resource management. If they are needed, recommended operational maintenance levels should be determined as part of those analyses.

**Determining the Watershed and Aquatic Risks of the Primary System Roads**

The IDT then evaluated each road or road segment with respect to relative watershed risk and aquatic risk, and assigned low-, medium-, or high-risk ratings. The watershed risk value was based on a relative soil sensitivity rating, geologic sensitivity rating, overall condition of the road when site-specific knowledge was available, and road-stream proximity. The aquatic risk assessment was based on road-stream proximity, the presence of listed Aquatic Threatened and Endangered or Sensitive species, and overall condition of the road when site-specific knowledge was available.

It is important to note that not every mile of a road in each of the risk categories has exactly the same level of risk. If major portions of a road had significantly different risks, the road was broken into segments, and the segments rated separately. For example, if approximately 50 percent or more of a road was initially rated as a high risk, then the road was not segmented, and the entire road was given a high-risk rating. And if only a small segment (less than 10% of the total length) of a road would merit a high risk rating and the rest was only a moderate risk, then the entire road was given a moderate risk rating. The results of the two risk ratings for each road or road segment are displayed in the road tables in Appendix A.

## Determining Overall Watershed and Aquatic Risks for each 6th Level Hydrologic Unit Code (HUC)

In a separate portion of the analysis an overall "Watershed risk rating" and "Aquatic risk rating" was determined for each 6$^{th}$ level HUC (considering only the lands administered by the Forest in each sub-watershed).

A description and details of the analysis process is included in Appendix D. Many scientific studies have documented the impacts of roads on to fish, wildlife, and watershed function, including direct mortality, habitat fragmentation, edge effects, viability and sustainability, and nesting and rearing disturbances (USDA Forest Service General Technical Report GTR-509: Forest Roads – A Synthesis of Scientific Information, May 2001). On the Malheur, the most significant road related impacts to listed Threatened and Endangered, and Sensitive Species (TES species) are those that impact fish and other aquatic species.

Consequently, terrestrial wildlife species were not used in the risk ratings that were done with this roads analysis. However, additional information about how and where roads impact both terrestrial and aquatics species can be found in the Aquatics and Terrestrial Wildlife sections of Appendix C.

**Watersheds and Aquatic Risk:** In a given watershed basin, aquatic health depends on watershed health. Using the risk elements listed in the following section, a GIS assessment was used to determine relative watershed risk and aquatic risk for each 6th - level watershed (see risk tables in Appendix D).

#### Watershed risk rating elements:

- Total road density (OML 1-5)
- OML 1 & 2 road density
- Total road density within 200 feet of perennial and intermittent streams
- OML 1 & 2 road density within 200 feet of perennial and intermittent streams
- Total road-stream crossing density (crossings/square mile)
- Geologic Sensitivity
- Soil Sensitivity

#### Aquatics Risk rating elements:

- Number of listed Threatened & Endangered, and Sensitive species present
- Identified Aquatics Strongholds

Each 6th -level HUC sub-watershed was assigned a low, moderate, or high rating for overall aquatics risk, and a low, moderate, or high, or extreme rating for overall watershed risk. The results of these risk ratings are intended to help prioritize and guide sub-forest scale road analyses.

## Information Needs

The IDT relied on the following information sources for this analysis:

- Routine annual maintenance cost estimates
- Annual maintenance cost estimates in INFRA.
- Capital Investment cost estimates in INFRA

- Deferred maintenance cost estimates in INFRA.
- INFRA travel routes.
- Potential Public Forest Service Road (PFSR) projects submittals.
- Suitable Timber Base identified in the Forest Plans (1990 Malheur Land and Resource Management Plan and the 1989 Ochoco Land and Resource Management Plan).

The IDT also used the following GIS base maps:

- Roads (all).
- Trails.
- 6th level Hydrologic Unit Code (HUC) subwatersheds.
- Streams and riparian areas.
- Geologic sensitivity ratings.
- Soil sensitivity ratings.
- Management Area descriptions from the Forest Plans.
- Recreation Opportunity Spectrum.
- Developed recreation and administrative sites.
- Land status.
- Occurrence of Threatened and Endangered or Sensitive aquatics species.
- Cooperative Travel Management Areas or "Green-dot" areas where seasonal road restrictions are managed in cooperation with Oregon Department of Fish and Wildlife and the Bureau of Land Management.

# Public Involvement

## Communications Plan

The IDT was concerned about the possibility of confusion on what is contained in a Forest scale roads analysis. Because the process does not involve an action proposal resulting in a decision, it would be difficult to collect input at the forest scale. The communication effort was aimed at stakeholders with a direct and meaningful interest in National Forest road system management. This was appropriate for two main reasons. First, this is not a NEPA analysis requiring a legally mandated level of public involvement (which is required when road-specific decisions are made). Secondly, numerous public communication efforts related to road and travel management have preceded this analysis.

## Public Contacts

### Prior to the Analysis

Public meetings were held at the beginning of the analysis process, one in John Day, Oregon and one in Burns, Oregon, both on 9/21/02. Written public input was also encouraged through radio announcements and articles in local newspapers. At that time,

only the current OML 3, 4, and 5 roads were proposed to be included in the analysis.

A summary of the general comments from the public included:

- When the Forest does decommission roads, be careful not to do more harm than good;
- The Forest should not close additional roads unless they are truly causing environmental damage;
- The Forest should let roads close naturally by allowing brush and other vegetation to encroach, rather than spending funds to do it;
- Future road planning and maintenance should focus on restoring hydrologic function – specifically through decommissioning roads located in close proximity to streams. Closing roads does little to restore hydrologic function;
- Most Forest visitors have pickups and other high clearance vehicles, so only a few roads need to be maintained for low clearance vehicles;
- It is important to maintain Forest roads that provide major recreational access to high standards (e.g. access to Magone Lake and the 16 road loop through Logan Valley);
- Don't do road work that increases driving hazards (such as narrowing roads that are wider than standard);
- Directional signing is important on main roads (e.g. 11 miles to Keeney Camp);
- The Forest should consider organizing a committee of local citizens to help with road decisions and planning.

**After the Analysis**

After the analysis process was finished, draft documentation of the process and results was prepared and reviewed internally. These draft documents were shared with agencies and parties that had expressed an interest early in the analysis process, and made available for public review on the Forest inter-net site for a period of 45 days. Comments and concerns that were received from interested parties during the public review period were analyzed and taken into consideration in preparing the final documents for the analysis.